(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) EP 1 114 786 B1

(12) **EUROPEAN PATENT SPECIFICATION**

(45) Date of publication and mention of the grant of the patent:
24.03.2004 Bulletin 2004/13

(51) Int Cl.[7]: **B65H 37/00**

(21) Application number: **00127479.4**

(22) Date of filing: **14.12.2000**

(54) **Printer head of a coating tool**

Auftragkopf für eine Auftragvorrichtung

Tête de transfert pour applicateur

(84) Designated Contracting States:
DE ES FR GB IT

(30) Priority: **06.01.2000 JP 2000000619**

(43) Date of publication of application:
11.07.2001 Bulletin 2001/28

(73) Proprietor: **TOMBOW PENCIL CO., LTD.**
Tokyo 114-8583 (JP)

(72) Inventor: **Masumoto, Hiroaki**
Tokyo, 114-8583 (JP)

(74) Representative: **Schmidt, Horst, Dr.**
Patentanwalt
Postfach 44 01 20
80750 München (DE)

(56) References cited:
EP-A- 0 742 111
US-A- 4 390 119
US-A- 4 853 074
US-A- 4 997 512

EP 1 114 786 B1

Printed by Jouve, 75001 PARIS (FR)

Description

[0001] The present invention relates to a printer head of a coating tool for transferring to a target object a correcting paint, a paste or the like which adheres to the surface of a transfer tape by pressing the rear surface of the transfer tape against the target object.

[0002] A printer head of a conventional coating tool has an elastic tongue portion made of a resin material, which elastically urges a pressure to a rear surface of the transfer tape, and further has a guide plate formed integral with the elastic tongue portion and adapted to regulate the lateral oscillations of the transfer tape on both sides thereof at the time of traveling of the transfer tape.

[0003] However, the printer head of the conventional coating tool having the above-described structure involves the problem that where the transfer tape travelling on the printer head is of a type having a paste-coated surface, since the transfer tape in its wound state is in the form of a so-called pancake, a very small amount of paste (a paste pool) may adhere to the rear surface of the transfer tape thereby it may easily come in contact with a transfer tape traveling surface of the printer head so that a smooth delivery and take-up operation of the transfer tape is hindered and the correcting paint or paste on the transfer tape can not be securely transferred and coated to the surface of the target object.

[0004] Further, the phenomenon that the smooth traveling of the transfer tape is hindered by the adhesion of the paste to the transfer tape traveling surface of the printer head due to the adhesion of a small amount of the paste to the rear surface of the transfer tape causes an excessive tensile force applied on the transfer tape itself so that there is a fear of a stretching of the transfer tape to an excessive degree or even a breakage of the tape. In order to enhance the sliding of a transfer tape along a printer head is has already been proposed (EP-A-0742111) to treat the surfaces thereof with a low coefficient of friction material. It can be assumed that such treatment is obtained by spraying a iiquid iow coefficient of friction material onto the surfaces. Although the desired effects of such treatment may prevail for an initial period of use of the tool they continuously become weaker and finally may disappear due to wear in course of time resulting that the transfer tape no more or not sufficiently is protected from excessive tensile forces acting thereon.

[0005] An object of the invention is to provide a printer head of a coating tool, which is simple in structure and which can securely transfer and coat a correcting paint or paste applied to a transfer tape to the surface of a target object, in which during the whole time of use of the coating tool smooth delivery and take-up of a transfer tape is ensured even in case a small amount of a paint or paste adheres to the rear surface of the transfer tape.

[0006] This object is achieved by the features of claim 1. Thus according to the invention a smooth traveling of a transfer tape, free of any excessive tensile force acting thereon is obtained by means of a pattern of fine corrugations on the top end of the elastic tongue portion of the printer head, which effectively prevents adhesion of the tape to the printer head. By this the coefficient of surface friction can be lowered to be less than 5. While a low friction network pattern of circumferentially bounded ridges is known from the US-A-4 390 119, this pattern is used in connection with a fast running tape of a record carrier where conditions prevail which clearly distinguish from those of a coating tool.

The invention will now be described with reference to the accompanying drawings and an embodiment thereof. In the drawings:

Fig. 1 is a front view of a coating tool having a printer head according to the present invention; and

Fig. 2 is a front view of the printer head of the coating tool shown in Fig. 1; and

[0007] In the drawings, reference numeral 1 designates a coating tool. The coating tool 1 can comprise: a main body 2 having an opening 4 and incorporating therein a transfer tape delivery and take-up mechanism. A pancake of wound unused transfer tape 3' is disposed on the shaft of a large gear of the transfer tape delivery and take-up mechanism and a small gear thereof meshes with the large gear and has a take-up reel mounted on the same shaft as that of the pancake so as to take up a waste transfer tape 3". The mechanism operates such that the unused transfer tape 3' is delivered from the pancake and the waste transfer tape 3" is taken up by the take-up reel. The coating tool further comprises a printer head 5 about which the transfer tape is guided during its travel from the pancake to the take-up reel for transferring and coating a correcting paint or paste applied on the surface of the transfer tape to the surface of a target object by exerting a pressure to the rear surface of the unused transfer tape delivered from the pancake so as to transfer the correcting paint or paste of the unused tape 3' to the surface of the target object.

[0008] The printer head 5 forming part of the coating tool 1 has a base portion for mounting to the main body 2 for protruding through the opening 4 thereof and an elastic tongue portion 6 having a top end for elastically pressing the rear surface of the transfer tape 3, and a guide plate 7 adapted to control the lateral oscillations of the transfer tape 3 during the traveling of the transfer tape. The elastic tongue portion 6 and the guide plate 7 are formed integral with the printer head 5 and are formed of a resin material. The elastic tongue portion 6 can be integral with the base portion of the printer head 5 or alternatively can be a separate part. Reference number 8 designates a travelling surface.

[0009] The printer head 5 at least on the tongue portion 6 thereof is provided with a pattern 9 of fine corru-

gations which provide for a low coefficient of surface friction of less than 5 or preferably in the order of 1.1 to 4, so that a smooth traveling of the transfer tape is secured and the transfer and coating of the correcting paint or paste to the surface of the target object can be performed securely whereby the user can perform a correcting paint or paste coating transfer operation in a stabilized manner and such inconvenience as an excessive expansion of the transfer tape or breakage of the tape taking place due to the adhesion of the transfer tape to the printer head can be prevented.

Claims

1. A printer head of a coating tool, about which a transfer tape in its travel from a tape delivery to a tape take-up mechanism of the coating tool is moved, said printer head (5) being supported by and projecting from a main body (2) of the coating tool (1) and having an elastic tongue portion (6) made of a resin material, said elastic tongue portion forming a top end serving for elastically pressing a rear surface of the transfer tape, in which at least said top end having a low friction surface, **characterized in that** said top end on its surface has a low-friction pattern formed of fine corrugations.

2. The printer head according to claim 1, wherein low-friction pattern provides for a coefficient of surface friction which is less than 5.

Patentansprüche

1. Aufdruckkopf eines Beschichtungsgerätes, um den ein Übertragungsband auf seinem Weg von einem Bandzuführ- zu einem Bandaufnahmemechanismus des Beschichtungsgerätes bewegt wird, wobei der Aufdruckkopf (5) von einem Hauptkörper (2) des Beschichtungsgerätes (1) gehalten ist und davon herausragt sowie einen elastischen Zungenbereich (6) aus einem Kunststoffmaterial aufweist, wobei der elastische Zungenbereich ein äusseres Ende bildet, welches dazu dient, eine rückseitige Oberfläche des Übertragungsbandes elastisch mit einem Druck zu beaufschlagen, wobei wenigstens das äussere Ende eine Oberfläche mit geringer Reibwirkung hat, **dadurch gekennzeichnet, dass** das äussere Ende auf seiner Oberfläche ein Muster mit geringer Reibwirkung, gebildet aus feinen Rillen, aufweist.

2. Aufdruckkopf nach Anspruch 1, bei dem das Muster mit geringer Reibwirkung einen Oberflächen-Reibkoeffizienten vorsieht, der kleiner als 5 ist.

Revendications

1. Tête d'impression d'un outil d'enduction, autour de laquelle une bande de transfert se déplace dans son défilement depuis un mécanisme de délivrance de bande vers un mécanisme de réception de bande de l'outil d'enduction, ladite tête d'impression (5) étant supportée par un corps principal (2) de l'outil d'enduction (1) et dépassant de celui-ci, et comportant une partie de languette élastique (6) faite d'un matériau de résine, ladite partie de languette élastique formant une extrémité supérieure servant à appuyer élastiquement sur une surface arrière de la bande de transfert, dans laquelle au moins ladite extrémité supérieure présente une faible surface de frottement, **caractérisée en ce que** ladite extrémité supérieure sur sa surface comporte un motif à faible frottement formé de fines ondulations.

2. Tête d'impression selon la revendication 1, dans laquelle le motif à faible frottement procure un coefficient de frottement superficiel qui est inférieur à 5.

FIG.1

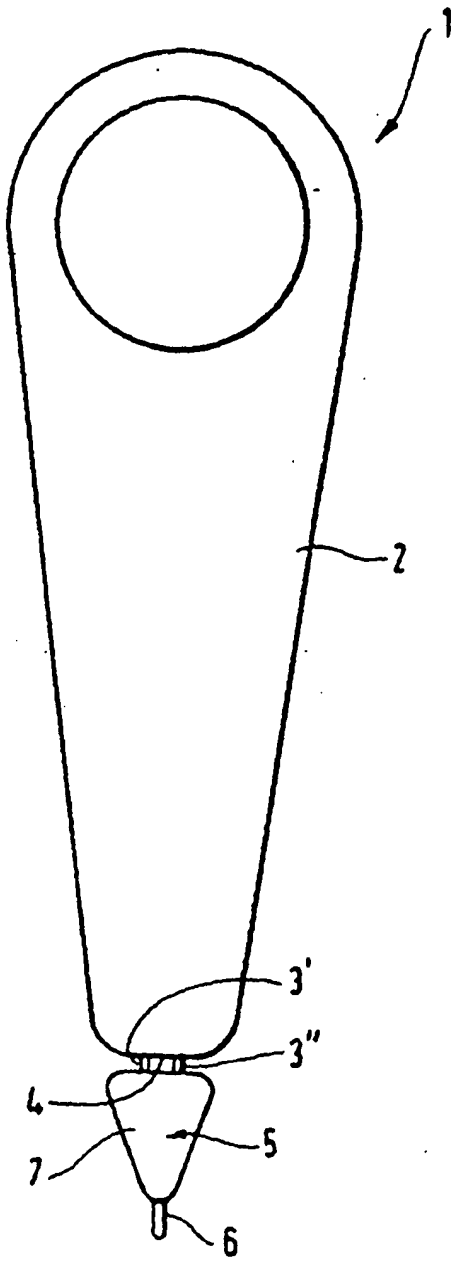

FIG. 2